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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention]A hit advance notice and great success information raise visual-recognition nature frame shape or by carrying out a surface state light-emitting display, and it is related with the light-emitting display for slot machines which makes it possible to announce great success beforehand to a playing person clearly, and to report it to him.

[0002]

[Description of the Prior Art]Conventionally, in the game stand represented by the slot machine (it is called henceforth a "pachislot".) which is provided with a revolving reel as for plural lines (usually three rows), if a medal is thrown in and a start lever is operated, this reel will start rotation and play will start. If operation in which a playing person pushes the stop button corresponding to each reel is carried out, a control section will be controlled so that the combination of the predetermined reel defined beforehand is displayed on a display window according to the position and inner prize state of a reel when a stop button is pushed by the playing person, and will stop a reel.

[0003]A pachislot stand in recent years excites play volition, and in order to raise the degree of agitation, the creativity on a display has been put. In order to announce beforehand a priori the state (it is called henceforth "great success".) where the reel of three rows stopped by the position to a playing person, Some methods which turn on and blink a lamp after the reel of two rows of them has stopped to the position (it is called henceforth "a reach eye".), and tell a playing person the advance notice of great success are taken. A lamp is turned on and blinked in the reach eye state, great success is announced beforehand (it is called henceforth "a hit advance notice".), and the thing of the following composition is among the conventional methods which tell that it was becoming it a great success (it is called henceforth "great success information".).

[0004]<Lighting [of an electric bulb] / blink> drawing 1 is a conventional example which builds an electric bulb in the inside of a revolving reel, and makes a back light type turn on and blink the pattern of a reel. Drawing 1 (a) is a bird's-eye view of a reel, and is built in the state which can be turned on and three electric bulbs (130a, 130b, 130c) fixed to the inside of the reel (100, 110, 120) rotated independently, respectively can blink. Drawing 1 (b) is a figure showing the A-A section of the reel 100. A reel rotates the periphery of three electric bulbs fixed to the transverse-plane side of a pachislot machine. Only lighting or blink is performed during rotation of a reel. In the case of drawing 1 (a), the row across the patterns 130a and 140,150 of a reel shows one of the big hit situations (it quotes as henceforth "the example of great success".), and a hit advance notice and great success information are displayed by lighting of the specific pattern on the unillustrated ornament front panel, blink, or the sound.

[0005]Drawing 2 is a figure showing the conventional example which has an electric bulb in the exterior of a reel. Drawing 2 (a) is a reel part front view of a pachislot, and a hit advance notice and great success information of three reels (200, 210, 220) warn by hitting by lighting of the specified pattern 230a on the ornament front panel, b, c, d, e and 240a, b, c, d, and e, and blink.

[0006]If it explains using the numerals in a figure, the specified patterns 230a and 240e will be turned on, The number of a reel serves as the hit advance notice and great success information which report the row of a for [make / it / blink / the diagonal below] (drawing 2 (a)), and serves as the hit advance notice report and great success information which report the row of a for [blink / the specified patterns 230e and 240a / turn on and / the diagonal right].

[0007]Two of more than are a case where the pattern of a reel is located in a line with an oblique direction.

[0008]Next, the case where it is three with which a pattern is horizontally located in a line is explained. For example, lighting with the specified patterns 230b and 240b and blink hit and carry out [announce beforehand and] great success information of the state where the pattern of the reels 210 and 220 gathers in the position which the pattern "7" of the reel 200 has stopped horizontally.

[0009]Lighting with the specified patterns 230c and 240c and blink hit and carry out [announce beforehand and] great success information of the state where the pattern of the reel 200 and the reel 220 gathers in the position which the pattern "7" of the reel 210 has stopped horizontally.

[0010]Similarly, lighting of the specified patterns 230d and 240d and blink hit and carry out [announce beforehand and] great success information of the state where the pattern of the reels 200 and 210 gathers in the position which the pattern "7" of the reel 220 has stopped horizontally.

[0011]Two kinds of displays of an oblique direction and three kinds of horizontal displays hit,

and serve as basic pattern of an advance notice.

[0012]Although it combines with the hit advance notice by this viewing and does not illustrate, it may warn by hitting by the "sound" emitted from the generating means of a sound.

[0013]Drawing 2 (b) is a right lateral schematic illustration of drawing 2 (a), and Lighting of the specified pattern 230a, b, c, d, e and 240a, b, c, d, and e, Blink is based on lighting with the electric bulb (electric bulb which is not illustrated [which is arranged like 260a, b, c, d, e, and its depth direction]) abbreviated-arranged on the back side of the face of a board, and blink.

[0014]In the case of drawing 1 and drawing 2, although the case where the electric bulb was being made into the example was shown, a light source arranges not only an electric bulb but LED, and a fluorescent tube, may light up and may be blinked. Hereafter, an electric bulb, LED, and a fluorescent tube are called electric bulb etc.

[0015]Instead of using a <electroluminescence (EL) lamp display> electric bulb, what formed the EL lamp in the line is stuck on the display window side of a rotation reel, and there is also a conventional example which hits by line luminescence of this lamp and performs advance notice and great success information.

[0016]Drawing 12 is a figure showing a general view of a pachislot device, and shows the state where the linear EL lamp was stuck on three (23, 24, 25) as a horizontal line, and the two display windows 21L, 21C, and 21R (26, 27) were stuck on it by the wrap unillustrated transparent plate as a slash into the figure.

[0017]Drawing 13 is a sectional view of the length direction showing the composition of the conventional EL lamp. In the figure, to the transverse-plane side of the luminous layer 2 which comprises phosphor powder and a synthetic resin, the transparent electrode layer 3, The back plate layer 5 which changes from aluminum foil to the back side on both sides of the insulation layer 4 is allotted, respectively, The nylon film 9 for moisture absorption is arranged for the water-capturing layer 8 which changes from the polyethylene film 6 and the nylon film 7 to the transverse-plane side of the transparent electrode layer 3 on the back side of the back plate layer 5, respectively, While forming the thin linear layered product, where it connected one end of the lead 10 to the transparent electrode 3 and the back plate 5, respectively and the other end of this lead 10 is sent outside, The above-mentioned layered product is covered with the translucent film 11 for moisture proof from the both sides of a transverse plane and the back, and it is manufactured by pasting up by both edge heat and a pressure.

[0018]Although drawing 14 is the composition containing the layered product explained by drawing 13, this EL lamp 30 is in the state which took out the other end of the lead 10 outside, covers the above-mentioned layered product with DIPINGU of the resin material for closure, and is constituted. It is supposed that fluoro-resin with a protecting effect is preferred as this resin material. Although DIPINGU [the above-mentioned layered product / with gel fluoro-resin] in the case of manufacture, after carrying out for several seconds per time and

repeating about 3 to 5 times as a process, the EL lamp structure coated with the dampproof fluorine film 31 shown in drawing 14 through natural seasoning is acquired.

[0019]If the EL lamp formed in the line as mentioned above is stuck like 23, 24 and 25 of drawing 12, and 26 and 27, the portion which EL lamps cross will arise.

[0020]<Others> There is also a method which sticks on the transparent plate of a display window the bright film which drew [a hit advance notice and great success information] five small-gage wires on wrap transparent plates (an acrylic resin, glass, etc.) for the display window directly not using electric means (an electric bulb, EL, etc.), or drew five small-gage wires beforehand further.

[0021]

[Problem(s) to be Solved by the Invention]However, there are the following problems in the above-mentioned conventional example.

[0022]It is a display [be / dispersion / lighting of a <technical problem (1) by lighting and blink of electric bulb etc.> electric bulb etc., the hit advance notice by blink, and great success information / partial], and the playing person (especially beginner) may be unable to recognize great success correctly. In order that most electric bulbs may light up and blink all at once, it may be hard to make a playing person (especially beginner) recognize a specific row in a hit advance notice and a great success information display in case there is two or more combination of great success simultaneously especially. In this case, it is taken as a decorative display of a game stand, and the case where an original hit advance notice and great success information display do not make a meaning may arise.

[0023](2) Although it is in the tendency which the combination of great success does not remain in a linear shape mere slanting and horizontal row, either, but complicates it, expressing intelligibly for a playing person still more complicated hit advance notice and great success information as the conventional method is approaching the limit.

[0024](3) The method which uses an electric bulb must exchange electric bulbs by the bulb gone or periodical maintenance, and its conservativeness is very bad. If dispersion in luminosity arises by old and new [of an electric bulb], visibility is reduced and the effect of a hit advance notice and great success information may not no longer be acquired.

[0025](4) Furthermore, the heat generated from an electric bulb has an adverse effect on the electronic circuit and sheathing material inside a pachislot machine, and the measure against heat poses an indispensable problem in the circuit design and the exterior design. Expressing a variegated hit advance notice and great success information with an electric bulb goes back with needs, and it makes this problem puffed up.

[0026](5) Methods which possess an electric bulb etc. and are turned on inside Lille become huge [an electric bulb, airframe wiring, etc.], and become indispensable [the parts constitution which the problem of the industrial waste treatment accompanying a model

change was pointed out, and took into consideration opposite environment nature including recycling].

[0027]although the technical thought of forming a <technical problem (6) of the conventional EL lamp display> EL lamp in a line (tape shape), and performing a winning-a-prize display is indicated by the application-for-utility-model-registration common No. 75445 [three to], and Japanese Patent Application No. No. 261944 [nine to], for example, the following technical problems occur concretely.

[0028]Since the EL lamp shown in drawing 12 thru/or 14 had indispensable moisture-proof processing of the luminous layer of *****ing 1** of the EL lamp formed in the line to fluoride (dipping), and also sealing it with a nylon film, its productivity was very bad.

[0029]If an EL lamp is formed in a line, in order to make the whole lamp emit light, the load resistance per unit area of an EL lamp will become large to the input voltage and current which are needed at worst, and fear of generation of heat and ignition will arise.

[0030]On the other hand, even if it can shine selectively with the input voltage and current in the tolerance level according to the load resistance of the EL lamp, it is impossible to make the linear whole EL lamp emit light to high-intensity.

[0031]These technical problems are verified based on the result of an examination and research, there are the above technical problems in making the EL lamp formed in the line (tape shape) already indicated emit light safely and appropriately, and there is a point which should be solved as a technical idea.

[0032]<the technical problem (7) of the method by electric display> -- not using electric means (an electric bulb, EL, etc.), The method which sticks on the transparent plate of a display window the bright film which drew five small-gage wires on wrap transparent plates (an acrylic resin, glass, etc.) for the display window directly, or drew five small-gage wires beforehand, When it hits to a playing person, an advance notice etc. are not specified actively and the combination of great success becomes complicated, there is a limit in the information only by the drawing drawing.

[0033]

[Means for Solving the Problem]A light-emitting display for slot machines applied to this invention in order to solve the above-mentioned technical problem mainly consists of the following composition.

[0034]Namely, a light-emitting display for slot machines which reports that two or more pivotable reels warned and gathered that it was equal to a specific stop position, Two or more light-emitting parts which formed an EL emitter in frame shape or surface state as a luminous unit of one, Two or more electrodes which receive voltage which has a predetermined frequency characteristic corresponding to said light-emitting part in order to make this each light-emitting part emit light to high-intensity, Two or more wiring sections for supplying said

received voltage to said two or more light-emitting parts, respectively, In order to cover a load resistance value over said voltage received in order to make said light-emitting part emit light with area of said whole polar zone and to make small a load resistance value per unit area, Said two or more light-emitting parts, an electrode of said plurality, and said two or more whole wiring sections are provided with a substrate formed on a substrate side of one sheet, and control and carry out the light-emitting display of the generation of heat by said receipt voltage.

[0035]As for a pattern formed in frame shape or surface state of said EL emitter, a straight line, a curve, and a pattern are included in a light-emitting display for the above-mentioned slot machines.

[0036]In a light-emitting display for the above-mentioned slot machines, the combination performs a hit [EL emitter / by which pattern formation was carried out to frame shape or surface state] advance notice and great success information according to a winning-a-prize situation as a luminous unit of one.

[0037]In a light-emitting display for the above-mentioned slot machines, an EL emitter by which pattern formation is carried out to frame shape or surface state on a field of said electrode may be organic electroluminescence.

[0038]

[Embodiment of the Invention]Hereafter, an embodiment of the invention is described in detail according to the accompanying drawing.

[0039](A 1st embodiment)

<Explanation of light-emitting display> drawing 3 is a figure showing the light-emitting part section of a light-emitting display. A luminescence principle is based on an electroluminescence (EL) and it screen-stencils to a transparent polyester film side, The photogen which can make a printing department emit light to a line, frame shape, or surface state is formed by energizing to a receipt electrode (it is called henceforth a "EL emitter").

[0040]310 of drawing 3 is a protection lamination and serves to protect the pattern of the formed EL emitter. 320 is a back plate and is formed according to the gestalten (for example, frame shape, surface state, a pattern, etc.) of an light-emitting display. 330, a fluorescent substance and 350 are transparent electrode substrates, and an insulating layer and 340 are formed over the whole substrate top surface. 360 is polyester film which is a substrate and is provided with the structure laminated in order on this field.

[0041]If the voltage and current which have a predetermined frequency characteristic from the power supply 370 are received, the fluorescent substance 350 will emit light (arrow direction in a figure). Such an EL emitter may be formed by using conductive paste by E. I. du Pont de Nemours & Co. (part number: 7154, 7151, 7144, 7145, 7153, 7155, 7160), for example. Since the EL emitter itself is not accompanied by generation of heat, in the point of not becoming a

heat source of the main part of a pachislot machine, and not affecting an electronic circuit and a sheathing material, it is an effective luminescence method.

[0042]When the aforementioned conductive paste is used as a fluorescent substance, since the measures against moisture proof are taken, the raw material does not need to take the measures against moisture proof which use the nylon film 9 for moisture absorption, and the film 11 grade for moisture proof like a conventional example. This point serves as a lamp of a conventional example, that of the EL emitter concerning this invention, and a difference in structure.

[0043]The EL emitter in the light-emitting display concerning the invention in this application is formed at a line, frame shape, or surface state based on screen-stencil on a substrate. It is a difference of the display style how the difference of "frame shape" or "surface state" arranges a fluorescent substance by screen-stencil here, and the luminescence principle is common.

[0044]"Surface state" means what makes the whole field as a flat surface a luminous unit, and what makes a luminous unit the pattern (what expressed the pattern itself with the EL emitter is included) formed in the field is contained.

[0045]Not only a straight line but also a modification line, a free form curve, etc. contains in the luminescence gestalt of "frame shape."

[0046]The transparent electrode substrate 350 on the 360th page of polyester film forms indium tin oxide by sputtering. Although the ground electrodes 508 and 710 in drawing 5 and drawing 7 in which the circuit pattern used in next explanation is shown show what was formed in the line with silver paste on the transparent electrode substrate 350, they flow with the transparent electrode substrate 350 via this silver paste line substantially.

[0047]In order to prevent the ultraviolet rays and oxygen (humidity) leading to degradation for a <protective measures for deterioration prevention of fluorescent substance> fluorescent substance, Degradation of a fluorescent substance can be kept to the minimum by vapor-depositing the ceramics (silica etc.) which prevent the penetration of an ultraviolet ray absorbent and oxygen on the surface of a plastic masking tape, and sticking a plastic masking tape so that the whole light-emitting part may be covered. In drawing 3, even if it performs deposition treatment for the deterioration prevention previously shown in the field (field of the opposite hand in which the transparent electrode substrate 350 is formed) of the line of sight of the polyester film 360 in first stage, the effect is the same.

[0048]As a typical example in the case of applying a <application to pachislot machine of light-emitting display> light-emitting display to a pachislot machine, the hit advance notice by the light emission pattern of frame shape and the hit advance notice of the light emission pattern by a straight line are explained.

[0049]<Hit advance notice by light emission pattern of frame shape> drawing 6 (a) is the figure which saw the display window portion of the pachislot which applied the light-emitting display

concerning this invention from the transverse plane, and is a figure showing the state of warning a luminous unit by hitting as a gestalt of frame shape.

[0050]Drawing 6 (b) is an abbreviated side view of the right-hand side about drawing 6 (a), and the light-emitting display 451 in which the light emission pattern of frame shape was formed in the ornament front panel (acrylic plate) 440 of the front face of the rotation reel 420 is attached to the medial surface of the main part of a pachislot machine. The light-emitting display 451 can be attached with the visual field range of two or more pivotable reels, and the corresponding basis of physical relationship (this means of attachment are explained in detail later). The reels 410 and 400 are attached to the depth direction of the reel 420 currently illustrated in drawing 6 (b) at the independently pivotable respectively state. The light emission pattern of the light-emitting display 451 is made so that the three reels 400, 410, and 420 and position relations may be formed, hits by lighting of an EL emitter, and blink, and displays an advance notice and great success information on a playing person.

[0051]The playing person can recognize visually the pattern of the stop position of the upper row of a reel, the middle, and the lower berth so that more clearly than drawing 6 (a). In the case of three reels, the row of nine patterns hits and it is the target of an advance notice and great success information.

[0052]400a, b, c and 410a, b, c and also 420a, b, and c show the EL emitter formed in frame shape, respectively. Each pattern in each stop position of a reel and the EL emitter formed in frame shape are attached so that the physical relationship that a pattern is settled within the limit may be realized.

[0053]The portion (400a, 410b, 420c) shown by the thick line among the EL emitters of the frame shape of drawing 6 (a) shows a luminescent state. In the case of drawing 6 (a), it is in the state which shows the advance notice in the direction for the diagonal below.

[0054]An oblique direction, a horizontal hit advance notice, and great success information are fundamental patterns, hit with such combination and can express an advance notice and great success information colorfully. This variegated light-emitting display is explained in detail later.

[0055]In the <circuitry of EL emitter of frame shape> light-emitting display 451, the example of the light emission pattern circuit formed by screen-stencil is shown in drawing 7. The portion shown by the thick frame line is an EL emitter, and the composition has the laminated structure shown in drawing 3. The voltage and the receipt part of current which have a predetermined frequency characteristic support the number of the EL emitters currently patternized for every 701 to 709, those with nine line, and luminescence part. 710 is a common electrode by the silver paste formed on the transparent electrode substrate 350.

[0056]In the EL emitter of the light-emitting display concerning this invention, it is possible to arrange a back plate, a fluorescent substance, etc. in the arbitrary positions within a field by screen-stencil by using polyester film as a substrate. Although the EL emitter arranged in this

way will have the peculiar resistance depending on the material to be used, The peculiar resistance becomes possible [providing the area within a sheet surface] by composition which forms the transparent electrode side which formed indium tin oxide in the sheet shaped polyester film 360 by sputtering like the light-emitting display concerning this invention.

[0057]That is, the value which covered the resistance of the whole light-emitting display as resistance per area becomes small compared with the conventional example (drawing 12, 13, 14) which formed the photogen as linear resistance. The resistance (resistance per unit area) of the portion concerning luminescence can be made low, securing the resisting pressure resistance demanded by using the field which does not start luminescence as electric load.

[0058]Since electric load becomes small in order to cover resistance with area even when the volts alternating current which has the predetermined voltage and frequency characteristic which are demanded in order to maintain high-intensity luminescence is impressed, calorific value also decreases according to it. The danger of generation of heat [as / in a conventional example] and ignition is cancelable.

[0059]In drawing 7, if the voltage and current which have a predetermined frequency characteristic which luminescence takes actual luminescence at the receipt part 701 are impressed, EL emitter 400a will emit light. If the voltage and current which have a predetermined frequency characteristic are similarly impressed to the receipt part 705, EL emitter 410b will emit light. What is necessary is just to impress the voltage and current which have a predetermined frequency characteristic to the receipt part corresponding to it, if the part which should be made to emit light as a hit advance notice and great success information can be pinpointed.

[0060]In order to make the EL emitter formed like drawing 7 emit light to high-intensity, the artificer is checking experimentally as conditions on which impressing the volts alternating current which has the characteristic of 2.6 kHz from 190V and frequency 400HZ from the voltage 100V realizes best luminosity.

[0061]Drawing 19 is a graph which shows the example of the experimental result, a vertical axis shows voltage and the horizontal axis shows time. As for (a), in frequency, frequency output voltage 100 ****-p and (b) by 2.326kHz by 2.0kHz Output voltage 100 ****-p, Frequency is a waveform of the volts alternating current of output voltage 180 ****-p** in 1.515kHz at 2.041kHz, and, as for (c), frequency shows sinusoidal type with smooth all, as for output voltage 120 ****-p and (d). Smooth sinusoidal type as shown in drawing 19 is experimentally called for within the limits of the conditions which realize best luminosity shown previously. When the waveform of a volts alternating current does not turn into smooth sinusoidal type, but distortion arises in a waveform or it becomes saw-like, it is checked that luminosity good as a result is not obtained.

[0062]The hit advance notice by a straight line and <great success information> drawing 4 (a)

are the figures which saw the display window portion of the pachislot which applied the light-emitting display concerning this invention from the transverse plane, and are a figure showing the state of warning a luminous unit by hitting as a straight line which is a stroke.

[0063]Drawing 4 (b) is an abbreviated side view of the right-hand side about drawing 4 (a), and the light-emitting display 450 in which the predetermined light emission pattern was formed in the ornament front panel (acrylic plate) 440 of the front face of a rotation reel is attached to the medial surface of the main part of a pachislot machine. The light-emitting display 450 can be attached with the visual field range of two or more pivotable reels, and the corresponding basis of physical relationship. It is the same as that of drawing 6 (a) and (b) that the row of nine patterns of three reels hits and it is the target of an advance notice and great success information.

[0064]460,480 and 465,470,475 show the EL emitter which formed the light-emitting part in linear shape, respectively. Each pattern in each stop position of a reel and the EL emitter formed in linear shape are attached so that physical relationship like drawing 4 (a) may be realized. The portion 460 shown by the thick line among the EL emitters of drawing 4 (a) shows a luminescent state. In the case of the figure, it is in the state which shows the advance notice in the direction for the diagonal below.

[0065]In the <circuitry of linear shape EL emitter> light-emitting display 450, the circuitry of the light emission pattern formed by screen-stencil is shown in drawing 5. The portion shown by the thick line is an EL emitter, and the composition has the laminated structure shown in drawing 3. The voltage and the receipt part of current which have a predetermined frequency characteristic support the number of the EL emitters currently patternized for every 501 to 507, those with seven line, and luminescence part.

[0066]508 is a common electrode by the silver paste formed on the transparent electrode substrate 350. In the EL emitter of the light-emitting display concerning this invention, it is possible to arrange an electrode, a fluorescent substance, etc. arbitrarily in a field by screen-stencil by using polyester film as a substrate.

[0067]In the case of drawing 5, between 501a and 501b is one luminous unit, and there are seven luminous units to 507a and 507b in a similar manner. It is illustration-like [this number] and the meaning of this invention is not limited to this. In the case of a field (a pattern is included), it is the same. If the voltage and current which have a predetermined frequency characteristic which luminescence takes are impressed to the receipt part 501, the EL emitter between 501a and 501b will emit light. If the voltage and current which have a predetermined frequency characteristic are similarly impressed to the receipt part 504, between EL emitters 504a and 504b will emit light. What is necessary is just to impress the voltage and current which have a predetermined frequency characteristic to the receipt part (501-507) corresponding to it, if the part which should be made to emit light as a hit advance notice and

great success information can be pinpointed.

[0068]Although it is three reels in the case of drawing 4 and drawing 6 and is aimed at nine patterns, it cannot be overemphasized that the meaning of this invention is not limited to this and it can respond according to extension of the winning-a-prize gestalt of a pachislot machine and a display style. The following explanation explains various display modes by the EL emitter of frame shape.

[0069]< per advance notice, a great success information > per advance notice, and a great success information display shine an EL emitter for every part of a luminous unit, hit by the combination display, and carry out advance notice and great success information. Henceforth, it hits in drawing 8 and drawing 9 explains the example of a great success information display for a notice display.

[0070]The hit advance notice of a fundamental winning-a-prize state of a pachislot machine and a great success information display consist of the following five kinds of combination.

[0071]

<Example of an light-emitting display of an oblique direction> Light-emitting display facing (1) diagonal below 400a, 410b, 420c (drawing 8 (a))

(2) Light-emitting display facing the diagonal right It is an light-emitting display at a level with 400c, 410b, and the 420a <horizontal example of light-emitting display> (1) upper row. 400a, 410a, 420a (drawing 8 (b))

(2) It is an light-emitting display to the level in discontinuation. 400b, and 410b and 420b It is an light-emitting display at a level with (3) lower berths.... It is a display example of a hit advance notice according [drawing 8 (b)] to a horizontal direction according [400c, 410c, and 420c drawing 8 (a)] to the hit advance notice of an oblique direction.

[0072]In correspondence with the circuit of drawing 7, in the case of drawing 8 (a), in order to make EL emitters 400a, 410b, and 420c of frame shape emit light, the voltage and current which have a predetermined frequency characteristic should just be impressed to the receipt parts 701, 704, and 707. What is necessary is similarly, in the case of drawing 8 (b), just to impress the voltage and current which have a predetermined frequency characteristic to the receipt part 701,705,709, in order to make 400a, 410a, and 420a emit light. What is necessary is just to supply the voltage etc. of the conditions similarly explained to the electrode corresponding to the portion made to emit light previously in the combination of others which are not being illustrated.

[0073]<the display style at the time of combining basic pattern selectively> -- the hit advance notice and great success information which comprise the above fundamental combination -- in addition, it is possible to correspond also to the winning-a-prize gestalt which improved play nature more.

[0074]Drawing 9 (a) is a great success information display example when the pattern of a reel

gathers in the shape of [of "*"] a character. It can display by making the display of an oblique direction emit light selectively, and combining it.

[0075]A great success information display can be displayed with combination with EL emitters 420a, 410b, and 420c of frame shape. What is necessary is just to carry out the seal of approval of the voltage and current which have a predetermined frequency characteristic in the receipt part 707,705,709 in correspondence with the circuit pattern of drawing 7.

[0076]It is a combination display example [according / drawing 9 (b) / to the character of "*" for reverse / according / drawing 9 (d) / to the character of downward "*"] according [drawing 9 (c)] to the character of upward "*".

[0077]In the EL emitter of frame shape, it is possible to change the combination of a luminescence gestalt by impressing predetermined voltage etc. to a receipt part independently by making one frame into a luminous unit. The example in the case of displaying two or more hit advance notices simultaneously is explained using drawing 10.

[0078]Drawing 10 (a) is an example which shows the case where two kinds of hit advance notices are displayed simultaneously. If "7" is equal to the upper row or the lower berth of the reel 400, it will be becoming it a great success.

[0079]The hit notice display should just impress the voltage and current which have a predetermined, predetermined frequency characteristic in the receipt electrodes 704, 705, and 707 in correspondence with the circuit pattern of drawing 7.

[0080]Drawing 10 (b) is a figure showing the state of great success information when "7" is equal to the lower berth of the reel 400.

[0081]The great success information display should just impress the voltage and current which have a predetermined, predetermined frequency characteristic in the electrodes 705, 707, and 703 in correspondence with the circuit pattern of drawing 7. The indicator 400a which was under lighting by the hit notice display stops the electric supply to the electrode 704 by dissolution of a reach eye state, and is switched off.

[0082]A hit advance notice and great success information are not limited to a certain direction, but combination flexibility can be extended by designing a light emission pattern in the arbitrary directions. It can respond also to the eye aggressiveness for elderly people from beginners by this.

[0083]The attribute of the color of a fluorescent substance (340 of drawing 3) determines the luminescent color of a <luminescent color> EL emitter. For example, blue, a white peach color, and a green fluorescence material paste (fundamental color) may be used, and it is not limited to this. From E. I. du Pont de Nemours & Co., as paste material of a fluorescent substance, yellowish green (part number: 7154) and bluish green (part number: 7151) are marketed, and these may be used. The change of the luminescent color can change the luminescent color of nuclear power plant phaosome by printing by color ink on nuclear power plant phaosome.

[0084]For example, in the circuit pattern figure of drawing 7, "green" can also be changed for the frame 400a and the luminescent color can also be changed for the frame 410b like "blue." By installation of the light filter by printing technique, the luminescent color itself can be brought close to all colors. Setting out of a color is possible also per stroke. In the circuit pattern figure of drawing 5, the luminescent color is [between 506a and 506b / between "green", and 501a and 501b] also changeable like "blue."

[0085]The method which attaches an EL emitter to <attachment of an EL emitter>, next the ornament front panel (acrylic plate) of the front face of a rotation reel is explained.

[0086](1) Invasion of the smoke of dust, garbage, and a cigarette, etc. can be prevented by using the attachment heat-resistant special adhesive by adhesives and a binder, and attaching to a direct electroluminescence sheet, an acrylic plate, or body casing. The same effect is acquired also by using a pressure sensitive adhesive double coated tape, a printing paste, etc.

[0087](2) It is possible to carry out the lamination of an electroluminescence sheet, an acrylic board, or the body casing, and to attach it by attachment special PETs (heat-resistant strong adhesion re peeling off, H or more, a 99% of surface hardness 2 ultraviolet-rays cut, etc.) by lamination-izing. As for this method, the effect that airtightness becomes high compared with the method of (1) is acquired. There is also a method of using engineering plastic films, such as a common plastic film, a fluorine film, etc. besides special PET, in lamination.

[0088](3) The notional composition of the attachment book method by insertion is shown in drawing 15. The guide groove 490 may be fabricated with special resin on the acrylic plate 440, and it may attach by inserting the slot 490a of a guide groove, and the sheet which formed the EL emitter in b.

[0089]Conversely, the electroluminescence sheet with a guide groove is made beforehand, and it may attach to an acrylic plate. In this case, the concavo-convex relation to drawing 14 and reverse becomes.

[0090]As shown in drawing 16, the curve curvature R Becoming may be provided in the guide groove 495, and predetermined curvature may be given and attached to the sheet in which the EL emitter was formed. By giving and attaching curvature, the catoptric light of an acrylic plate can be distributed and attachment in which visibility acted as Kougami more can be performed.

[0091]Attachment and detachment of the sheet in which the EL emitter was formed are easy for the mounting method using a guide groove, and it can respond to change of a model, etc. promptly.

[0092](4) The notional composition of the attachment book method by insertion of an acrylic board is shown in drawing 17. The sheet in which the EL emitter was formed may be inserted and attached between the two acrylic plates 440a and 440b.

[0093](5) Common plastic films, such as an attachment PET film, and the sheet of EL by composite-izing of a film are connected, and may be attached. The notional composition of this method is shown in drawing 18. PET film 444 is attached to the acrylic plate 440 in the slash part. When the inside of a dashed line part cannot be attached by restrictions of accessories, general tools, etc., the sheet 417 of the EL emitter of the size of the minimum necessary is stuck on PET film 444, and it unifies by tying. Although it is also more possible than the beginning to make the sheet size of an EL emitter identically to the PET film sheet 444, Since it is expensive compared with a PET film, the sheet of an EL emitter attains low cost-ization by using this material only for a required portion and using a PET film etc. for other portions. The unified sheet may be attached with the application of the method of (4) from the above (1).

[0094]According to the light-emitting display for pachislots applied to this embodiment as beyond the <effect of the embodiment> explained, what visual-recognition nature is raised, and is clearly hit-warned and great success reported to a playing person by carrying out the light-emitting display of a hit advance notice and the great success information to frame shape or surface state is made possible.

[0095]Since screen-stencil can design a light emission pattern arbitrarily, the combination flexibility of great success can be extended and offer of a pachislot with higher play nature is enabled.

[0096]By forming a transparent electrode substrate covering a sheet shaped polyester film side, it becomes possible [resistance peculiar to a light-emitting display] to provide the area of a transparent electrode substrate side, and the resistance per unit area becomes small compared with the conventional example which formed the photogen in the line. The resistance of the portion concerning luminescence can be made low, securing the resisting pressure resistance demanded by using the field which does not start luminescence as electric load.

[0097]That is, since electric load becomes small compared with the case of the EL lamp formed in the line even when the volts alternating current which has the predetermined voltage and frequency characteristic which are demanded in order to maintain high-intensity luminescence is impressed, calorific value also decreases and fear of ignition by generation of heat can be canceled.

[0098]Luminescence of EL itself is a luminescence method without generation of heat, and since it does not become a heat source of the main part of a pachislot machine, the subordinate effect that the design condition of the measure against heat can be eased in the design of an electronic circuit and the design of an armoring part is also acquired.

[0099]Since laborsaving of electric power can be attained and polyester film is used as the substrate by adopting the luminescence method by an EL emitter, the weight saving of a member becomes possible. Since it is a luminescence method without generation of heat, the

degree of option of an inside exterior member spreads, and selection of the inner exterior member in consideration of environment can be realized.

[0100](A 2nd embodiment) Drawing 11 (a) is the schematic elevation which saw the pachislot which applied the light-emitting display concerning this invention from the transverse plane. Drawing 11 (b) is an abbreviated side view about drawing 11 (a). Although the light-emitting displays 450 and 451 (drawing 4, drawing 6) were attached to the ornament front panel (acrylic plate) 440 in a 1st embodiment at the position-related basis, In this embodiment, it differs in the point which forms the ornament front panel and a light-emitting display in one.

[0101]Although an EL emitter is provided with a laminated structure as shown in drawing 3, It is also possible not to depend on an operating mode (attachment to the ornament front panel) like a 1st embodiment, but to apply a light-emitting display to a pachislot machine by having composition which uses the sheet in which the EL emitter was formed by using the polyester film 360 as a substrate as the ornament front panel.

[0102]In drawing 11, 950 shows the light-emitting display at the time of using the sheet in which the EL emitter was formed as the ornament front panel. According to this embodiment, in addition to the effect acquired by 1st embodiment, the cost on the design by reduction of part mark and manufacture can be reduced. The social needs that reduction of part mark points to the parts constitution in consideration of opposite environment nature agree on disposal of a model.

[0103](A 3rd embodiment) When the reel in a pachislot carried out the light-emitting display of the information equal to the advance notice which is equal to a specific stop position in a 1st embodiment, raised visual-recognition nature, and announced beforehand and reported great success to the playing person clearly, but. Even if the scope of the light-emitting display concerning this invention is not limited to a pachislot and it applies it to what is called a pachinko stand, it cannot be overemphasized that the same effect is acquired.

[0104]That is, a hit advance notice and great success information can be judged, and the light-emitting display applied to this invention also in a pachinko stand provided with a means to supply the voltage and current which have a predetermined frequency characteristic can be applied.

[0105](A 4th embodiment) Although the above-mentioned embodiment has explained as a motif the EL emitter formed by screen-stencil, The meaning of this invention is not limited to this and makes the anode from the ITO vacuum evaporation which is a transparent electrode on glass and a plastic film, for example, Even if electronic energy uses the organic electroluminescence emitted in the form of light by coating and vapor-depositing a hole transporting bed, a luminous layer, and an electron transport layer one by one, forming the back plate layer of the negative pole by aluminum vacuum evaporation finally, and impressing a direct current, it cannot be overemphasized that the same effect is acquired.

[0106]

[Effect of the Invention]By carrying out the light-emitting display of a hit advance notice and the great success information to frame shape or surface state, and reporting them, visual-recognition nature is raised and what is clearly hit-warned and great success reported to a playing person is made possible.

[0107]Since screen-stencil can design a light emission pattern arbitrarily, the combination flexibility of great success can be extended and offer of a pachislot with higher play nature is enabled.

[0108]By forming a transparent electrode substrate covering a substrate side, it becomes possible [resistance peculiar to a light-emitting display] to provide the area of a transparent electrode substrate side, and the resistance per unit area becomes small compared with the conventional example which formed the photogen in the line.

[0109]That is, since electric load becomes small compared with the case of the EL lamp formed in the line even when the volts alternating current which has the predetermined voltage and frequency characteristic which are demanded in order to maintain high-intensity luminescence is impressed, calorific value also decreases and fear of ignition by generation of heat is also canceled.

[0110]Luminescence of EL itself is a luminescence method without generation of heat, and since it does not become a heat source of the main part of a pachislot machine, the subordinate effect that the design condition of the measure against heat can be eased in the design of an electronic circuit and the design of an armoring part is also acquired.

[Translation done.]